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the boiler, to close the valve E, by hand if necessary.) It is upon the fact of the pressure upon both the valves E and I being constant, that I rely for success ; for all the other schemes of whose existence I am aware have this defect, that the pressure from the boiler is variable, while the pressure from without is fixed ; and even in boilers working with common low-pressure steam, that which is technically termed “boiling over,” is often noticed when the steam becomes suddenly of a higher pressure than the feed-pipes were calculated to overcome, and the safety-valve is neglected. I have brought this proposition forward as applied to high-pressure boilers, but I am inclined to think that it might be applied with economy, as far as regards the prime cost, even in cases where the Jack-head system is effective, as the cost of the extra valves and tank would certainly not be more than that of the great amount of piping required under the above-named system ; and the inconvenience to which their height and position expose them, and the absolute necessity which must exist, whenever the pressure is increased, of adding to that height, would be done away with.

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No. XVI.

FLOATING BREAKWATER.

*The SILVER MEDAL was presented to Major PARLBY,  
No. 7 Allée d'Antin, Paris, for his plan of forming a  
Floating Breakwater.*

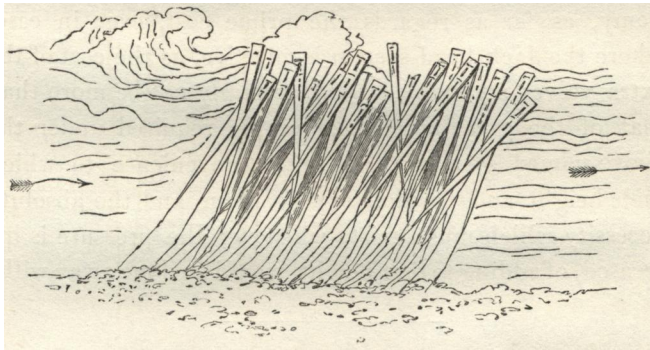
*7 Allée d'Antin, Champs Elysées, Paris,  
7 February, 1843.*

THE principle upon which this breakwater is founded is derived from the natural effects from certain causes

which may be observed in extensive lakes or rivers, or on the shores of the ocean.

Thus it will be found, that, in extensive lakes or rivers, or where there are banks of reeds projecting out from the shore, or in small patches like islands, however strong the winds may blow or the currents run, so that formidable waves are raised in the open space, yet under the lee of these banks or islands, the water will be comparatively calm, and on the sea-shore, in many places, especially about the Cape of Good Hope, where there are large banks of sea-weed, particularly of a kind commonly called the “ trumpet-weed ” (from its growing in the form

*Fig. 1.*

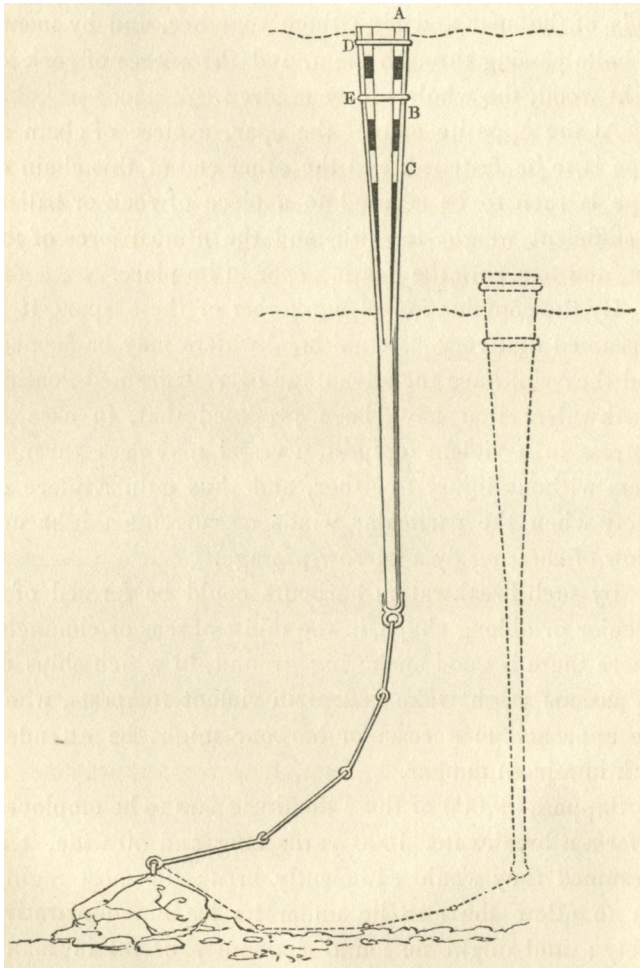


of hollow tubes, with trumpet-formed terminations), that where large belts of this weed are found, the sea is comparatively calm within them, however tempestuous the waves may be without. This is the principle upon which this breakwater is founded. A general view of the breakwater is shewn in fig. 1.

To form the breakwater rough spars of deal or light wood are to be taken, and at one end of each spar, two saw kerfs, at right angles to each other, are to be cut, dividing the spar longitudinally for about half its length.

The cut ends of the spar are then to be extended so that the interior surfaces of the four segmental quarters are about one foot apart at the end, and pieces of cork or

*Fig. 2.*



light wood *A B C*, fig. 2, are then to be placed in the conical opening, leaving two or three open spaces which,

by creating counter currents, will assist in breaking the force of the waves.

Two iron rings *D E*, rounded on the outside, are then to be securely fastened upon the spars, to secure the cut ends of the spar and bind them together, and by means of bolts passing through them, and the pieces of cork or light wood, the whole will be secured.

At the opposite end of the spar, a piece of chain or rope is to be fastened, and the other end of this chain or rope is then to be secured to a piece of rock or ballast of sufficient weight to withstand the utmost force of the sea, and to secure the floating spar in its place.

By the combination of a number of these spars, it is presumed that very effectual breakwaters may be formed, and they will have the advantage over all framed floating breakwaters that have been proposed that, in case of distress in a violent tempest, a vessel may pass through them without injury to either, and thus gain a place of safety when the particular winds or currents might not allow of entering by a narrow passage.

By such breakwaters harbours could be formed of a circular or oblong shape, in the midst of seas or channels, where there is good anchoring ground, in which ships of all nations might take refuge in violent tempests, when the approach to a coast or harbour might be attended with imminent danger.

Suppose 50,000 of these floating spars to be employed to form a breakwater 1000 yards long and 50 wide, it is presumed they would sufficiently break the most raging sea to allow ships to lie under its lee in comparative safety; and might be found eminently useful in many places to protect the landing at piers and jetties, and the anchoring ground of ships in open roads.

The principle of the proposed floating breakwater, compared to that of a framed floating breakwater, is not only superior, by allowing vessels to pass through it without injury, but in that it commences from the very bottom of the sea, and thus resists the whole vertical depth of the waves, and will not allow any part to pass under it, as in the case of floating breakwaters, which only sink a certain depth into the sea.

It is also, perhaps, as economical in construction, and as easily placed, as any description of breakwater that has been proposed.

SAMUEL PARLBY,  
Retired Major, Bengal Artillery.

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18 Rutland Gate, Hyde Park, London,

SIR,

June 3, 1843.

It is with feelings of proud satisfaction that I have the honour to acknowledge the receipt of your official note, stating, that the Society of Arts had voted me their silver medal for the floating breakwater of my invention; and these sentiments are increased by the hope that, as a Committee of a Society which so honourably encourages inventions, especially those which may be nationally useful, has approved of this principle of forming breakwaters, that, at a future day, when carried into practice, it may be found useful to my country.

I have the honour to submit to you a set of drawings and descriptions of the invention agreeable to the proposal in your note.

I am, Sir, &c.

FRANCIS WHISHAW, Esq.  
Secretary, &c. &c.

SAMUEL PARLBY.